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REPORT

OF THE

BOTANICAL SURVEY OF INDIA

For 1954-55.

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BOTANICAL SURVEY OF INDIA

FOR THE YEAR 1954-55.

CENTRAL OFFICE (CALCUTTA).

Administrative :

Rev. Father H. Santapau took charge of the office of the Chief Botanist, Botanical Survey of India on the 1st December, 1954.

The Central Botanical Laboratory which was working here under Dr. E. K. Janaki Ammal was transferred to Lucknow.

Mr. K. S. Srinivasan, Curator, Industrial Section, Indian Museum (Botanical Museum) was sent on tour to Okha and Dwarka for the exploration of Sea Weeds and other Water Plants.

Dr. K. M. Sebastine, Botanist, Central Botanical Laboratory, Lucknow, was sent for a tour to South India for the exploration of certain Economic Plants for the experimental trial in the Laboratory at Lucknow.

Arrangement was completed for the purchase of necessary scientific instruments and field equipment and publication for references, etc.

Tours :

The Chief Botanist, Dr. H. Santapau, had two days discussions in the University of Delhi on the work connected with the preparation of the Flora of Delhi and its neighbourhood carried out in Delhi University.

The Chief Botanist attended the Indian Pharmaceutical Congress held at Baroda on 1st and 2nd January, 1955, where he took part in different discussions on various subjects on two occasions. He also attended the Symposium on the "Vegetation types of India" organised by the Indian Botanical Society during the symposium. The Chief Botanist also attended the Annual General Meeting of the Indian Botanical Society in Jan. '55 at Baroda at which he was elected President for the year 1955-56 ; he also attended the Annual General Meeting of the National Institute of Sciences of India in Jan. '55 at Baroda.

He attended the session of the Indian Science Congress held at Baroda and presided over an *ad hoc* sub-committee of the Pharmaceutical and Drug Committee of the Council of Scientific and Industrial Research on the availability of *Rauwolfia serpentina* in India and prepared recommendations to be sent to the Government of India, concerning the cultivation of the plants in the country.

The Chief Botanist, Dr. Santapau, led the members of the Indian Botanical Society to the field for the study of the local vegetation. Members from all over India, attended this field exploration at Pavagadh hill near Baroda. The result of the field study will be published in due course.

The Chief Botanist undertook a tour to Bombay and Poona in connection with the establishment of the Western Circle of the Botanical Survey of India and also to discuss the planning of the Laboratory for Radio-isotope work under the Botanical Survey of India.

He visited Poona to arrange for the transfer of the Herbarium of the Economic Botanist, Bombay State, to the Botanical Survey of India and visited the Law College Society to arrange for temporary quarter for the officers and herbarium of the Western Circle, Botanical Survey of India.

The Chief Botanist attended the conference of Botanists held in Delhi on the 30th and 31st March, 1955, under the Chairmanship of Sri K. D. Malaviya, Hon'ble Minister for Natural Resources and Scientific Research.

Scientific work :

The Chief Botanist attended to scientific queries from different universities and commercial firms of India. Necessary help was also rendered to several research workers with Latin and German translations of new species of plants and he acted as referee on several Botanical papers for Indian Scientific Journal.

(a) *Translation of Latin & German description of new species.*

The Chief Botanist rendered assistance towards translations of a number of Latin and German descriptions of some new species of plants to the following Botanists in compliance with their request, and also to many other correspondents :—

(1) Dr. K. Ram Krishnan, Senior Lecturer of Madras University, Botany Laboratory.

(2) Dr. V. P. Domle, Ph. D., Pratap College, Amalner, E. K.

(3) Dr. M. Kaundaswami, B. Sc., Government Mycologist, Coimbatore, South India.

(4) Dr. S. B. Saksena, Saugar University.

(b) *Refereeing Botanical papers for Scientific Journals.*

The Chief Botanist acted as a Referee for examining the standard and suitability of scientific papers which were sent by the editors of different Journals for his comments. During the period under review he examined one such paper for the proceedings of National Institute of Sciences, two for the Journal of the Scientific and Industrial Research, and four for the Journal of Bombay Natural History Society.

(c) *Examination of the MS. to issue as Botanical Survey of India Records.*

(1) After examination of a fairly big manuscript entitled "Monograph of Indian Cucurbitaceae" by Dr. H. L. Chakravorty, Government was approached for sanction for the printing of this as a new volume of the Records of the Botanical Survey of India.

(2) The manuscript of the Flora of Tirunevelly District which was sent by the Director of Agriculture, Madras, was examined and found to be suitable for publication in the Records of the Botanical Survey of India provided certain important corrections are introduced in the MS.

(d) *Supply of Botanical notes and information on plant products*

Relevant information on the identity of *Canavalia* sp. on the habitat of *Rauwolfia canescens,* the sources of supply of various species of *Rauwolfia* and its derivatives ; on the Genus *Alocasia* ; on some edible medicinal plants of East Nepal ; *Olea Dioica ; Helleborus niger ;* on the sources of supply of viable materials of *Aconitum heterophyllum ; Aconitum chasmanthum ;* were furnished to different correspondents and amongst the beneficiaries the names of the following may be mentioned : Dr. B.M. Johri, Reader in Botany, University of Delhi ; Col. S. S. Bhatnagar, Director, Caius Research Laboratory, St. Xavier's College, Bombay ; Prof. R. N. Lakhanpal of Birbal Sahni Institute of Palaeobotany, Lucknow ; Dr. K. J. Divalia, Head of the Deptt. Quality Central Serabhai Chemicals, Wadi Wadi, Baroda ; Dr. K. Raschke of Poona ; Prof. M. L. Banerjee of Meerut ; Dr. H. T. Hartamn of California ; Mr. Sawhney, C. S. I. R. Publication, Division New Delhi ; Dr. D. L. Shrivastava ; Director of Cinchona Deptt., Otacamund, Nilgiri and many others.

Lectures delivered :

The Chief Botanist delivered a lecture on the Botanical exploration of Western India to the post-graduate students and members of the staff of the Botany Section of Delhi University during the end of December, 1954 and he also took them out into the field for a practical demonstration of methods in field study.

The Chief Botanist delivered a lecture on the aims etc., of the Botanical Survey of India to the University of Poona (on 9.2.55) and Bombay (on 11.1.55). He also gave help and guidance to research students of Bombay, Poona, Delhi, Baroda and Gujrat Universities in connection with the botanical exploration of the respective districts.

A popular lecture on the Botanical exploration of North Kanara, Bombay State, was delivered by the Chief Botanist on the 18th February, 1955, in the lecture hall of the Indian Museum. The lecture which was illustrated with coloured lantern slides, was well attended and highly appreciated by the audience.

A lecture on the same subject was also delivered before Botany students of Calcutta University.

Another lecture was also given on the aims and methods of the Botanical Survey of India, at the request of the Post-graduate students and Professors of Botany of Calcutta University.

Publications :

The following papers were published during the year :—

(1) A paper entitled "Contribution to the Flora of the Dangs Forest" by H. Santapau, in the Journal of the Gujrat Research Society in the last November of 1954.

(2) "Some beautiful Indian Climbers and Shrubs" by Dr. N. L. Bor and S. B. Raizada, edited with an introduction by Dr. H. Santapau and published by Bombay Natural History Society in December, 1954.

(3) "Botanical tour in North Kanara, Bombay State, in May 1954" in Journal of the Bombay Natural History Society.

(4) "The Botanical aspect of *Rauwolfia serpentina*" in Journal of Indian Pharmacy.

(5) "A new Chlorophytum from Bombay" in Journal of the Bombay Natural History Society.

(6) "Instruction for field Collectors of the Botanical Survey of India" by Dr. H. Santapau.

Besides, the Chief Botanist prepared several book reviews for Science and Culture, Journal of Bombay Natural History Society and the Journal of Scientific and Industrial Research.

Financial :

A sum of Rs. 6,93,000/- was provided for the reorganisation and development of the Botanical Survey of India for the year 1954-55 under the First Five Year Plan, out of which a sum of Rs. 2,25,576/- was spent and a sum of Rs. 4,50,364/- was surrendered and the rest of the amount was not spent as the purchase could not be effected within the year.

SYSTEMATIC DIVISION

(HERBARIUM)

INDIAN BOTANIC GARDEN, SIBPUR.

Staff :

The duties of the Director, Botanical Survey of India and other interests at the Herbarium were discharged by Dr. K. Biswas, Superintendent, Indian Botanic Garden, Calcutta, upto the 30th November, 1954 and then by Father H. Santapau, Chief Botanist, Botanical Survey of India, who joined office on the 1st December, 1954. Shri R. Seshagiri Rao, Systematic Assistant, carried on his duties throughout the period under report. During the period from 9th August, 1954 to 16th September, 1954 when the Superintendent was on tour to Russia and other places as a delegate of Government of India, the Systematic Assistant carried on the current duties of the Superintendent in addition to his own.

Tours :

During the period under review, Superintendent went on tour twice to Rongo and other places in the Eastern Himalayas and collected a few Drug specimens for the Lausanne Trade Show, Switzerland and also for the Herbarium. During his tour as Government of India delegate to visit the All Union Agricultural Exhibition at Moscow and also other parts of Europe, the Superintendent visited the Botanic Gardens and the Agricultural, Botanical and other Institutions in Leningrad and also the continental Herbaria, Botanical Gardens and other scientific institutions. The Systematic Assistant while attending the Indian Science Congress Session at Baroda during January, 1955, participated in the excursion to the Pavagadh hill near Baroda along with a few other botanists led by

Father H. Santapau and made detailed notes on the vegetation of the region during his climb upto the top of the hill. He also visited the Agricultural Institute at Anand during his stay at Baroda and gathered some useful information regarding the present problems of research taken up at the Institute.

Research workers :

Prof. H. L. Chakravorty and Shri J. N. Mitra of Presidency College, Calcutta ; Shri D. B. Deb, D. M. College, Imphal, Manipur ; Shri K. George of Bose Research Institute, Calcutta ; Shri V. N. Sahni, Indian Institute of Technology, Kharagpur ; Shri D. N. Das, Science College, Calcutta University ; Shri R. N. Ganguli, Agricultural Research Institute, Tollygunge, Calcutta ; Shri M. B. Raizada, Forest Research Institute, Dehra Dun ; Dr. N. W. Simmonds, Imperial College of Tropical Agriculture, Trinidad ; and a few others worked in the Herbarium from time to time.

Visitors :

Among the visitors to the Herbarium and the Gardens may be mentioned—the members of the Goodwill Mission from Indonesia, Prof. John M. Fogg Jr., Professor of Botany and Director of Morris Arboretum, University of Pensylvania, U.S.A.; Prof. M. Masuyama, Tokyo University ; Prof. M. Rubinstein and other professors of Academy of Sciences, U. S. S. R., Moscow ; Shri U. Kyaw Khine and other members of Burma Forest Service ; Prof. and Mrs. Gilbert M. Smith, Stanford University, California ; author of the well-known Cryptogamic Botany and several others from different parts of India and abroad.

Herbarium :

The routine work such as mounting, repairing, incorporating, replacing the genus and species covers and numbering of the herbarium sheets were carried out by the Herbarium staff. 468 specimens received from various colleges, universities and scientific institutions in India were identified by the Systematic Assistant besides the material collected by him. Several herbarium sheets were sent on loan for research workers in various institutions in India and abroad. Three type sheets obtained from Rijks Herbarium, Leiden, Holland for the study of the Systematic Assistant were returned after the study.

Supply of information :

Information on both scientific and economic aspects relating to the vegetable resources of India was supplied to various research workers and industrialists in India and abroad in reply to their queries. Such information includes notes on nomenclature, distribution, descriptions, cultivation of different types of plants and other allied subjects (*vide* Appendix I). Besides these, several plant materials and coloured drawings for research work, demonstration and exhibition purposes were supplied to many correspondents in and outside India (*vide* Appendix II).

Research and other items of work :

Species of *Abies, Marsilea, Chonemorpha, Paramignva* and a few others were examined and their nomenclature was corrected by the Systematic Assistant. A few families starting from Ranunculaceae of Duthie's Flora of the Upper Gangetic Plain were preliminarily revised by the Systematic Assistant with necessary additions and corrections of nomenclature. Work on "Revision of the Malvales of Uttar Pradesh" has been taken up by the Systematic Assistant in collaboration with another worker stationed in U.P.

The Systematic Assistant attended the 42nd Session of the Indian Science Congress held at Baroda from 2nd January to 10th January, 1955 and read two papers one on "the Observations on the Vegetation of the Rampa and Gudem Agency Tracts of the Eastern Ghats" in the Symposium on "Vegetation Types of India" organised by the Indian Botanical Society and another on "A Revision of the Indo-Malayan species of *Viscum*" in the Sectional meeting of the Indian Science Congress Session. The Systematic Assistant also took part in the deliberations of a few other symposia.

The following papers were published or sent for publication by Shri R. S. Rao, Systematic Assistant, Botanical Survey of India, during the period under review :

(1) "New Species of Indian Plants" published in the Journal of the Bombay Natural History Society, Vol. 52, No. 1, 1954.

(2) 41 Abstracts published in April, 1955 and subsequent issues in various scientific papers.

(3) "Chonemorpha mollissima Boerl." published in Journal of Indian Botanical Society, Vol. 34, No. 1, 1955.

(4) "Observations on the vegetation of the Rampa and Gudem Agency tracts of the Eastern Ghats" sent for publication in the symposium number on " the vegetation types of India" (Abstract published in the proceedings of the Symposium).

More than 200 papers and notes on different branches of Indian Botany were published during the period under report in various Indian and foreign journals.

Total net revenue from the sale of publications—"Records of the Botanical Survey of India" and "Flora of the Upper Gangetic Plain" by J. F. Duthie amounted to Rs. 90-2-0 during the year. The budget grant for the Systematic Division for the year under review was Rs. 18,400 of which Rs. 17,811 was spent.

APPENDIX I

(i) Notes on nomenclature and distribution of various species of :

Guettarda, Rosa, Rauwolfia, Erysanthes, Doryalis, Gmelina, Gymnosporia, 10 species of medicinal plants, *Biebersteinia, Dirachma, Monsonia, Urena,* several indigenous drug plants used in veterinary practice, *Adenium, Emilia, Elephantopus, Lochnera,* several garden plants, *Selaginella, Grewia, Enterolobium, Hedyotis, Heterophragma, Myrtus, Convolvulus, Marsilea,* Indian and North American species of *Sesbania, Elyonurus, Chloris, Arceuthobium.*

(ii) Description of various species of :

Grewia, Corchorus, Mecardonia, Triumfetta Litchi, Nephelium, Euphoria, Parmela, Catinbium.

(iii) Notes on cultivation of species of :

Ficus, Psoralea, Rauwolfia, Adenium, Thevetia, Litchi, Nephelium, Euphorbia.

(iv) Notes on miscellaneous subjects such as :

Vegetable wealth and botanical exploration of Tehri Garhwal ; availability and flowering seasons of a few species of *Simarubaceae, Ochnaceae,* and a few other families cultivated in the Indian Botanic Garden, Calcutta ; availability and sources of supply of seeds of Burma species of *Rosa* ; various types of ' Myrtle ', their distribution, commercial value and other allied matter ; quality of *Rauwolfia* material exported from India, its adulteration, percentages of alkaloid contents, medicinal value and other allied matter ; medicinal properties of *Thevetia* ; literature on wild food and medicinal plants of Indian names and addresses of botanical gardens in India ; literature on medicinal plants and Indian Botany ; availability and sources of supply of species of *Indigofera* and *Pithecolobium* ; sources of supply of seeds of *Dalbergia* ; literature on Litchi fruits ; comparative study of photos of a fossil leaf ; list of plants poisonous to cattle and man available in the Indian Botanic Garden, Calcutta ; various herbs and cereals being cultivated in different parts of India where ' Indigo ' was once under cultivation ; fruiting and setting of seeds of *Cratoxylon polyanthum* plants growing in the Indian Botanic Garden ; sources of availability of *Dogwood cortex* (*cornus sanguinea*) possible sources of supply of ' Dohnwai ' creeper and details of plant materials containing Saponin ; vernacular names of *Capsicum* ; drug value of *Rauwolfia serpentina,* its export from India, references on the Botany and Chemistry of the Plant, common adulterants, method of cultivation, sources of supply of seeds and other allied information of this drug plant ; economic importance of *Grewia* and *Microcos* ; earlier explorations in Tehri Garhwal and various references on the Biological collections of that area ; outline of work with reference to the Revision of Malvales of Uttar Pradesh ; work done by department of Botanical Survey of India on ' Flora of Rajputana desert'; suggestions regarding places of interest for Botanical study in the Darjeeling Himalayas.

Materials Supplied and Received :

Fixed materials of flowers, fruits and seeds and other dried plant parts of :

Cratoxylon, Areca, Bactris, Caryota, Annona, Polyalthea, Goniothalamus, Uvaria, Unona, Brownea, Saraca, Elephantopus, Enterolobium, Cinnamomum, Ochna, and *Noronhia.*

Important drug specimens (21 packets for Lausanne Trade Fair), Herbarium sheets of drug specimens (35 sheets for Lausanne Trade Fair), *Rauwolfia* species (Genuine root bits) *Dolichos* (10 races of seeds), *Abies* (cones), a specimen of *Sesamum alatum* (*S. Ekambaramii*).

Coloured plants and drawings :

10 coloured plates of ornamental plants for Indian Show room at Colombo ;

13 coloured plates of important medicinal plants of India for the Indian Stall at Lausanne Trade Fair, Switzerland.

One drawing of *Marsilea aegyptiaca* for research workers.

One drawing of *Viscum mysorense* from the Photo of Type specimen for research purposes.

INDUSTRIAL SECTION, INDIAN MUSEUM, CALCUTTA.

The Industrial Section, Indian Museum, concerns itself mainly with the collection, preservation, proper maintenance and display of all plant products, chiefly to illustrate the vegetable wealth of India in relation to Agriculture, Forestry, Medicine, Commerce and Industry. The exhibition galleries quite apart from serving as an institution for the correct identification of plants and plant parts for research purposes, afford entertainment to the general public and substantially help in the dissemination of knowledge on economic and other groups of plants in India.

Maintenance of Exhibits in the Galleries and in the Reserve Collections :

Several thousands of valuable specimens representing India's vegetable resources in relation to the economic life of the people are displayed in the Exhibition Galleries, and kept in the reserve and study collections, for the benefit of the public. To prevent them from deterioration due to the influence of destructive agents such as insects, moulds, etc., several specimens had to be daily turned over, examined and properly treated. The number of specimens so treated during the year was 30,195.

Labelling of Specimens :

Labels, either descriptive and group labels, or individual labels, are quite necessary both from the Scientific point of view and from the point of popular interest. During the year 10,900 labels were prepared and exhibited.

Library :

Attached to the Industrial Section, Indian Museum, there is a very valuable Library containing botanical literature. The Library has now been placed on a very sound basis with the introduction of modern library techniques, indexing and cataloguing. Over 1,259 publications were also added to the Library, 902 books were loaned out, 3,980 books were labelled, 4,700 books were treated with preservatives, 3,541 books were checked with old registers, 430 index cards were prepared and 396 books were reaccessioned during the year under report. A number of Readers, Research workers and Students visited the Library to consult the books and periodicals. The corrected proof for library catalogue was sent to the Press for final printing.

Herbarium :

In the Herbarium, during the year, 1,200 algal herbarium sheets were numbered and registered, 842 specimens were remounted on sheets, 1,165 herbarium sheets were repaired, 105 species covers were changed, 42 plant specimens were collected locally for the herbarium, 20,902 herbarium sheets were treated with preservatives and 2,016 herbarium labels were replaced.

Acquisition :

The acquisitions are of varied nature, and their number is dependent on the availability of fund. Some of the acquisitions made during the

year include raw materials of food and fodder samples, medicinal products, oil-seeds, gums and resins, fibre and dye-stuffs, and certain model of fruits and vegetables, and also botanical charts, models of botanical specimens and several other specimens of interest. 18 herbarium sheets of Marine Algae were acquired from Dr. A. B. Cribb, Department of Botany, University of Queensland, Australia. Besides 72 samples of cotton exhibits consisting of combat boards showing staple lengths of cottons, kapas, seeds and lint and also 36 herbarium sheets of cotton plants in seedling, vegetative and reproductive stages and also after maturation of the agricultural varieties were acquired from the cotton specialist, Coimbatore at a total cost of Rs. 25/- only. Photographs illustrating Jute Industry were also taken at Domjur in Howrah District, for preparing diaroma of the industry for display in the gallery. One large size oil colour painting of Tea cultivation and one oil colour painting depicting some general aspects of agriculture and forestry were done by the Departmental Artist for display.

Exhibition :

The demand of the Industrial Section to organise or to participate in exhibitions held by Schools, Colleges and learned societies and institutions, has been increasing, and its co-operation is well appreciated. During the year, this section participated in the exhibitions held by the City College, Biological Association, Calcutta and in the Lecture Hall of the Asiatic Society where some fine samples of sedge mats from Tinnevelly Dt. S. I., were exhibited on 2nd August, 1954, at the request of the members of the Society on the occasion of their monthly general meeting. The Curator delivered a talk explaining various aspects and also the importance of this cottage industry of South India, which is practically going to extinct for want of proper encouragement. The lecture, which was illustrated with lantern slides and films, was very much appreciated by the learned members of the Society.

Enquiries attended, materials supplied and other services :

The volume of work handled in this direction, in consideration of the extremely meagre staff attached to this Section has been quite appreciable. Enquiries were received from both India and abroad, and information supplied related to availability in commercial quantities, source and nature of crude drugs, oil-seeds, species and other economic plants, advice on herbal farming, geographical distribution, vernacular names and their commercial counterparts, etc. Authentic materials were also procured and supplied to various parties for research and study purposes, and among some of the beneficiaries may be mentioned, the Research Assistant, Marine, Biological Station, Krusadai Island (S.I.) ; Messrs. Eastman & Company, Calcutta ; the Director of Commercial Intelligence and Statistics, Calcutta ; Dr. Kapoor of the Zoological Survey of India ; Dr. Leslie, W. A. Ahrendt of Oxfordshire, England ; Sri S. Sen Gupta, Assistant Session Judge, Alipore, 24-Parganas ; the Director, Anthropological Survey of India, Calcutta ; the Superintendent, Royal Botanic Gardens, Peradeniya, Ceylon ; the Director, Drug Research Laboratory, Jammu and Kashmir ; Dr. E. K. Janaki Ammal, Director, Central Botanical Laboratory ; the Assistant Editor, Botany Section, C. S. I. R., Publication Division, New Delhi ; Sri M. K. Padmaprabha Gounder, M. L. A. of Wynaad, South India and others.

Tours :

The Curator, Industrial Section, Indian Museum, undertook a tour to Okha and Dwarka with his Assistants to survey the Marine flora of the Bombay coast.

Scientific Work :

The Curator studied the Diatom flora of the Chilka Lake in India, which also revealed several species new to Indian waters. The Curator's paper on *Tydemania expeditiones* was published in the July issue (1954) of 'Phytomorphology'—an international botanical journal. Curator's article on *Biddulphia Tuomeyii* a new diatom to India was published in Current Science. The Curator, also studied the collections of plants from Nepal. In this connection, several visits were made to the Herbarium at Sibpur and the entire orchid collection therein was examined and much data was collected. This revealed several interesting facts. Further studies were in progress. The Curator was assisted in the literary and herbarium work by Mr. A. Basu.

Visitors :

The Curator received H. E. Marshall Tito, President of Yogoslavia and the Chinese Cultural Delegation and showed them round the Museum. A large number of visitors from different Provinces and States and also students from Schools and Colleges visited the Galleries.

Budget :

The Departmental grant for Industrial Section, Indian Museum, under pay and allowances of staff and other charges for the year 1954-55 was Rs. 73,386/-, out of which the sum of Rs. 73,386/- was spent. A sum of Rs. 100/- was available to this Section from the Indian Museum Post-war Trust Fund, out of which the sum of Rs. 32-11-6 alone was spent.

Administration :

The Curator carried out the work relating to the Industrial Section and the Survey, except the Systematic Division, until the Chief Botanist took over charge on 1st December, 1954. During the absence of the Chief Botanist on tour to Delhi and Baroda from 14th December, 1954 to 13th January, 1955, the Curator looked after the duties of the Chief Botanist. The Curator served also as an ex-officio Trustee and as the Honorary Secretary to the Trustees, Indian Museum.

CENTRAL BOTANICAL LABORATORY, LUCKNOW

The Central Botanical Laboratory came into existence on 14th April, 1954 as a part of the Reorganised Botanical Survey of India. It was temporarily located in the Indian Museum, Calcutta from 14th April, 1954 to 30th November, 1954 and was shifted to the Central Drug Research Institute, Lucknow from 1st December, 1954.

Work of the Central Botanical Laboratory :

(1) *Creation of new varieties of vegetables, fruits and drugs by induction of tetraploids by means of colchicine :*

The use of colchicine for inducing tetraploids is well known and though much work has been done on Agricultural and Horticultural plants Tropical trees and drug have not been experimented on.

At the Central Botanical Laboratory, seedlings of the following fruits were treated successfully :

(i) *Artocarpus integra.*

(ii) Custard Apple.

(iii) *Eugenia Cumini.*

(iv) Litchi.

(v) Mango.

(2) *The Survey of the Waterlilies of India :*

Owing to their restricted fresh water habitat—waterlilies are indicators of old land connections and their cyto-systematic study throws light on evolutionary problem. Collections of *Nymphaea* made and received from various parts of India were being grown in large earthen pots for study. The cytological data from Peninsular collections of the small blue waterlily *Nymphaea Stellata* links this species with the blue waterlily of *N. Madagascarensis* morphologically and cytologically. Both species are primitive deploids with 2n= 28 chromosomes.

A large form of the same species *N. Coerulea* collected in Shillong, seems more related to the Sacred Blue waterlily of the Nile and seems identical with the forms represented in the Ajanta paintings. The red waterlily of Bengal *N. rubra* is found to be a tetraploid 2n= 56 and is thus more highly evolved than the blues. The survey continued to be in progress.

(3) *Search for New Economic Plants* :

(a) In the study of the evolution of cultivated plants, ethnobotanical studies involving the genetic analysis of plants collected or grown by aboriginals will indicate the ancestral types from which the cultivated forms are derived. Such studies were initiated for the first time on the genus *Dioscorea* (yam).

(b) *Potentilla Mooniana* from the Khasi Hills was found to be used as a substitute for *Arecanuts* by hill tribes and the cultivation of this plant in the hills of Assam might help in easing the export of *Arecanuts* to India. Specimens collected were sent to the Drug Research Institute for analysis.

(c) Search for wild Dioscoreas collected by aboriginal tribes in the Wynaad and Anamalai hills of Malabar and Coimbatore was conducted by the Director and several species were brought and were being grown

for comparative studies with cultivated forms and for possible new introduction into cultivation and improvement by hybridization. A preliminary cytological examination of some of these showed them to be primitive deploids.

(4) *Cytological Study :*

The Cytogenetic Laboratory started functioning fully in the Botany room of the Central Drug Research Institute, Lucknow, in January, 1955.

Cytological study on some of the medicinal plants occurring in the Gangetic plain was undertaken. Chromosome counts were made on medicinal plants like *Withania somnifera* Dunal, *Datura stramonium* L., *Ocimum canum* Sims, *Cannabis sativa* L., *Asphodelus tenuifolius* Cav., and *Achyranthes aspera* L., to see if any local chromosome variation existed in these plants in this part of India.

Calatropis gigantea and *Calatropis procera* were examined by Botanist to compare the relative merits from the point of fibre contents of these two species for possible introduction for cultivation in arid regions. The breaking weight of Calatropis fibre is said to be higher than Coir, Agave or Sunn hemp and this fibre was even once used in India for making tiger traps. The study of this fibre was being continued.

(5) *Work of the Botanist :*

The Botanist, Dr. K. M. Sebastine, who joined on October, 15th started work on special investigations on the Economic plants of India. These comprised :

(i) The Eco-systematic study of *Cymbopogan Martinii* which yields Rusa oil

(ii) Study of the light woods of S. India and

(iii) Adventive or introduced species of Economic trees of India.

Amongst the species under investigation were *Anacardium*, the Cashew-nut and the Custard Apples.

The Botanist went on tour to Travancore-Cochin for collection of Economic plants and their wild progenitors for cytological and morphological study in this Laboratory. Wild prototypes and local varieties of many crops of Malabar like *Turmeric, Pepper, Yams, Taro, Sweet Potatoes, Garcinia, Kaempferia, Cashew nuts* and many medicinal plants were collected and notes were taken on their habit and habitat. These plants were being grown in pots for further study.

(6) *Publications :*

(i) "The Cyto-Geography of the Genus *Buddleia* in Asia" by Dr. E. K. Janaki Ammal in Science and Culture, June 1954.

(ii) "The Scope and Functions of the Reorganised Botanical Survey of India" by Dr. E. K. Janaki Ammal in Science and Culture, Vol. 20, December, 1954, page 275.

The following officers were appointed during the year 1954-55 :—

Name of the post	Name of the Officers appointed	Date of appointment
Director	Dr. E. K. Janaki Ammal	14th April, 1954
Botanist	Dr. K. M. Sebastine	15th October, 1954

H. SANTAPAU,
Chief Botanist,
Botanical Survey of India.

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